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LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI,
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Declaration under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a
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Published:

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ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: CORROSION-RESISTANT PLY BOND ADHESIVES AND PRODUCTS AND PROCESSES INCORPORATING
SUCH ADHESIVES

(57) Abstract: Corrosion-resistant adhesive compositions are provided. The compositions are useful for bonding together plies in multi-ply cellulosic fibrous structures. Multi-ply cellulosic fibrous structures incorporating the adhesives, products produced from such structures, and methods of producing the structures are also disclosed. The adhesive compositions incorporate a polyvinyl alcohol polymer and a corrosion inhibitor. The adhesive compositions may be sprayed or coated onto the cellulosic structures to bond layers of the structure to each other. The corrosion-resistant adhesive compositions are useful for preventing corrosion in the various devices used for handling and application of the adhesives such as spray equipment and applicator rolls. The cellulosic fibrous structures may be used to produce a variety of products including paper towels, toilet tissue, facial tissue, napkins, and other absorbent materials.



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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2005/042155

A. CLASSIFICATION OF SUBJECT MATTER

INV. C09J129/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C09J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3 135 648 A (HAWKINS RAYMOND L) 2 June 1964 (1964-06-02) cited in the application column 1, lines 1-12 column 2, lines 9-11,27-31,49-51,55 column 3, lines 11-46; claim 1; examples 1,6-12	1-3,11, 16-18
Y	----- US 2 324 601 A (SPANAGEL EDGAR W) 20 July 1943 (1943-07-20) page 1, right-hand column, line 25 page 2, right-hand column, lines 55-57; examples I,II page 7, left-hand column, lines 11-15 ----- -/--	1-3



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search

20 July 2006

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 224 208 A (KENT ET AL) 23 September 1980 (1980-09-23) column 4, lines 27-44; claims 1,3,5 column 3, lines 52,53	1
Y		11-14, 16-18
X	----- EP 0 413 136 A (KURARAY CO., LTD) 20 February 1991 (1991-02-20) page 2, lines 33-50; claims 1,3,10,11; example 1 page 6, lines 41-55	1-4
Y	----- US 6 635 134 B1 (LICHTENBERG RALPH B ET AL) 21 October 2003 (2003-10-21) paragraphs [0015], [0029]; claims 1-34 -----	12-14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/042155

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1 - 3. part of 4, 11 - 14, 16 - 18

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-3, part of 4, 11-14, 16-18

the adhesive with a neutralised amine as a corrosion inhibitor of claim 4; the laminate of claim 11 and the method of claim 16

2. claims: part of 4, 11-14, 16-18

the adhesive with aqueous blends of polyoxylates as a corrosion inhibitor of claim 4; the laminate of claim 11 and the method of claim 16

3. claims: part of 4, 11-14, 16-18

the adhesive with blends of a mercaptan and a amine as a corrosion inhibitor of claim 4; the laminate of claim 11 and the method of claim 16

4. claims: 5-10, 15, 19, 20, part of claims: 4, 11-14, 16-18

the adhesive with sodium benzoate as a corrosion inhibitor of claim 4; the laminate of claim 11 and the method of claim 16

5. claims: part of 4, 11-14, 16-18

the adhesive with a combination of sulfurous acid, a dipotassium salt, diethylaminoethanol as a corrosion inhibitor of claim 4; the laminate of claim 11 and the method of claim 16

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2005/042155

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